The Sources of Capital Misallocation
by Joel David and Venky Venkateswaran

Discussion by Rüdiger Bachmann, University of Notre Dame, CEPR, CESifo, ifo

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March 1, 2019
Research question

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- Uncertainty (and incomplete information)
- Factors correlated with firm size (e.g., financial frictions)
- Firm-fixed factors (e.g., production function heterogeneities)
Model framework

Heterogeneous firms (due to heterogeneous revenue productivities, information, and distortions) plus:
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  - Transitory
  - Permanent
Identification - analytical: random walk for productivity

Parameters:

1. Adjustment costs
2. Precision of news
3. Productivity-dependence of distortions
4. Transitory distortion variance
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Identified by:

1. Autocorrelation of investment
2. Variance of investment
3. Correlation between investment and productivity
4. Transitory distortion variance
Identification - numerical: AR(1) for productivity

Parameters:

1. Persistence and variance of productivity
2. Permanent distortion variance
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Identified by:
1. Persistence and variance of productivity
2. Dispersion of average capital revenue product (residual category)
Results I

Transitory distortion variance: largely irrelevant.
Results 1

Transitory distortion variance: largely irrelevant.

For US:

- Adjustment costs: 11%.
- Uncertainty: 7%.
- Productivity-dependent: 14%.
- Permanent fixed factors: 65%.

For China:
Adjustment costs irrelevant.
Uncertainty 10%.
Rest is 50/50: productivity-dependent and permanent fixed factors.
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Results II

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For China, **consistent with:**
- Some role for production function heterogeneity.
- Size-dependent policies.
- Financial frictions.
Overall theme

Which moments to match?
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Classical question in quantitative macro.
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One that’s contentious:

Korinek (2017): “Thoughts on DSGE Macroeconomics: Matching the Moment, But Missing the Point?”
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*Matching the Moment, but Missing the Point? [...] Should we have greater confidence in DSGE models that match more moments and that achieve a closer match to certain moments of the data than other models? Are these likely to provide a more useful guide to reality? There is no scientific basis to answer this question affirmatively.*

Korinek (2017): “Thoughts on DSGE Macroeconomics: Matching the Moment, But Missing the Point?”
Comment I: adjustment costs

Tension between: autocorrelation of investment (is low or negative, wants fixed costs) ...
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In any event: too much correlation between investment and productivity.
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- I think I can fix that (your model still not rich enough?):

  - Richer adjustment technology with free maintenance investment (Khan and Thomas, 2008): less inaction.
  - Add other (non-distortion) shocks to lower investment-productivity correlation.
  - Other moments you don't consider:
    - Skewness and kurtosis of investment rates: Bachmann and Bayer (2014) have an identification result as well.
    - Really the entire investment rate histogram from Cooper and Haltiwanger (2006).
    - Procyclicality of extensive margin of investment and its cross-sectional dispersion, while investment conditional on adjustment is countercyclically disperse: need fixed costs – Bachmann and Bayer (2014). Also Gourio and Kashyap (2007).
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<table>
<thead>
<tr>
<th>Cross-sectional standard deviation of…</th>
<th>Correlation with cycle</th>
<th>Fraction of…</th>
</tr>
</thead>
<tbody>
<tr>
<td>Investment rates</td>
<td>0.45**</td>
<td>Adjusters</td>
</tr>
<tr>
<td>Output growth</td>
<td>−0.45*</td>
<td>Spike adjusters</td>
</tr>
<tr>
<td>Employment growth</td>
<td>−0.50**</td>
<td></td>
</tr>
<tr>
<td>Invest. rates conditional on spike adjustment</td>
<td>−0.55***</td>
<td></td>
</tr>
<tr>
<td>Productivity growth</td>
<td>−0.47**</td>
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What are adjustment costs – physically – anyway? Other than a stand-in to generate certain investment moments?
Comment II: fixed effects and uncertainty (adjustment costs)

What if firms are themselves permanently heteroskedastic? Bachmann, Carstensen, Lautenbacher and Schneider (2018) show for percentage quarterly sales growth rates in German manufacturing:

- Average time series volatility: 11.41%, cross-sectional dispersion around that: 9.22%.
- Average span between best and worst scenario forecast: 12.34%, cross-sectional dispersion around that: 7.35%.
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I would not be shocked if adjustment costs are also very heterogeneous (over and above their relation to size). Any research on that?
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**Bottom line:** adjustment costs and uncertainty could be themselves behind the fixed or size-dependent factors.
Random Comment III: firms vs. plants

Has anyone looked at the difference between the across-firm and the within-firm-across-plant misallocation?

Could be informative of the nature of misallocation: finance versus technological.
Comment IV: really a negative paper

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- Already useful for policy?
Comment V: which moments to match?

Two additional examples from the paper:
Comment V: which moments to match?

Difference in the isomoment curves: $\rho = 1$ vs. $\rho = 0.9$.
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Curvature of capital in the reduced-form revenue function: fixed here at 0.62 – lots of investment moments are highly sensitive to this parameter, and the literature has no consensus on its value.
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- The Christiano-solution: build super-complex models with lots of frictions and shocks and estimate via full information ML.
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I think the paper is a bit short on the latter (while very strong on the identification part).
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Conclusion

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I would, however, caution against the idea that showing identification inside the model is already a good argument about what is going on in the real world.